

ARCTIC, KOTZEBUE, AND NORTON SOUND

2002 Fisheries Resource Monitoring Plan

Review Draft

Federal Subsistence Management Program

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INTRODUCTION

Background

On October 1, 1999, the Secretaries of the Interior and Agriculture expanded Federal subsistence fisheries management in Alaska under Title VIII of ANILCA. To meet this management responsibility, the Federal Subsistence Board established the Fisheries Resource Monitoring Program to gather information on fish stock status and trends, subsistence harvest patterns, and traditional ecological knowledge. Improving the range of available information is crucial to effective fisheries management—both to protect Fisheries resources and to ensure the subsistence priority.

The Fisheries Resource Monitoring Program funds studies to gather, analyze, and report information needed to manage and conserve subsistence Fisheries resources, address fisheries issues and priorities identified by the Regional Advisory Councils, minimize Fisheries conflicts, and address regulatory actions before the Board. The Board has adopted a unified approach where Federal agencies work together with State, Tribal and local organizations. The Monitoring Program is multi-disciplinary, blending together the biological and social sciences with traditional ecological knowledge to manage and conserve Fisheries resources and ensure priority is given to subsistence users on Federal Conservation Units in Alaska.

The five Federal agencies work with Alaska Department of Fish and Game, Regional Councils, Alaska Native tribes, and other organizations to implement the Monitoring Program. The Federal Subsistence Board continues to rely on the special role of the Regional Councils to document Fisheries issues and data needs, and to provide recommendations on studies to implement the Monitoring Program. The purpose of this booklet is to document management issues and information needs, and to present the 2002 draft Fisheries Resource Monitoring Plan.

Study Selection Process

To develop an effective and scientifically sound monitoring program, local input on management issues and information needs is vital to ensure that the highest priority subsistence needs are addressed. During the winter 2001 and fall 2000 Regional Advisory Council meetings, the Councils were requested to provide this input as an important first step in the development of the 2002 Fisheries Resource Monitoring Plan. Subsistence users, the public, tribes, ADF&G, and Federal agencies worked with the Regional Advisory Councils to identify issues and information needs. This information is summarized in the overview for each region.

To ensure studies are scientifically sound and address subsistence priorities, the Board has developed a process where interested parties submit study proposals that address the management issues and information needs identified by the Regional Councils. Proposals are evaluated by Fisheries Information Services Division staff and the Technical Review Committee using four ranking factors: strategic priorities, technical-scientific merit, past performance-administrative expertise, and partnership-capacity building, as detailed on the next page.

RANKING FACTORS FOR FEDERAL SUBSISTENCE FISHERIES STUDIES

STRATEGIC PRIORITIES

Ideal studies will be responsive to the issues and information needs identified within the Regional Advisory Councils. Studies should address the criteria listed below and must fully meet the first criteria to be eligible for Federal subsistence funding.

1. **Federal Jurisdiction** – Issue or information needs addressed in studies must have a direct association to a subsistence fishery within a Federal Conservation Unit.
2. **Conservation Mandate** – Risk to the conservation of species and populations that support subsistence fisheries and risk to conservation unit purposes.
3. **Allocation Priority** – Risk of failure to provide a priority to subsistence uses and risk that subsistence harvest needs will not be met.
4. **Data Gaps** – Amount of information available to support subsistence management (higher priority given where a lack of information exists).
5. **Role of Resource** – Importance of a species to a subsistence harvest (e.g., number of villages affected, pounds of fish harvested, miles of river) and qualitative significance (e.g., cultural value, unique seasonal role).
6. **Local Concern** – Level of user concerns over subsistence harvests (e.g., allocation – upstream vs. downstream, recreational use concerns, changes in size of fish).

TECHNICAL-SCIENTIFIC MERIT

Technical quality of the study design must meet accepted standards for information collection, compilation, analysis, and reporting. Excellent studies will have clear study objectives, appropriate sampling design, correct statistical analysis procedures, and specified progress and final reports.

PAST PERFORMANCE-ADMINISTRATIVE EXPERTISE

Investigators and their organizations should have demonstrated technical and administrative expertise to complete the study or have co-investigators or appropriate partnerships with other organizations to meet all requirements of the study. Studies must be non-duplicative with other studies. Principal and co-investigators should possess the expertise required to complete the study and have had successful experience with similar studies.

PARTNERSHIP-CAPACITY BUILDING

Studies must include appropriate partners and contribute to the capacities of agencies, local communities, and residents to participate in fishery resource management. Studies must have completed appropriate consultation about their study with local villages and communities in the area where the study is to be conducted (letters of support from local organizations add to the strength of a proposal). Investigators and their organizations should be able to demonstrate the ability to maintain effective local relationships and a commitment to capacity building.

For studies that best meet the four ranking factors and address Regional Council priorities, investigation plans are prepared to more fully evaluate the studies against the ranking factors and

Council issues. The investigation plans are reviewed by the Technical Review Committee, and the highest quality proposals that address urgent management concerns are then put together into a draft monitoring plan. Because local involvement and capacity building are critical components of the Monitoring Program, the draft plan is presented to the Regional Councils for their review. Public input is also gathered, and the draft plan is presented to the Federal Subsistence Board, along with Regional Council and public comments. For the 2002 Monitoring Plan, the Board will make decisions on the final plan in December, 2001. Most studies approved by the Board will begin during summer, 2002.

2002 Fisheries Resource Monitoring Plan

In 2002, Congress continued to fund implementation of the Fisheries Resource Monitoring Program. During 2002, the U.S. Fish and Wildlife Service will provide \$5.25 million and the U.S. Forest Service will provide \$2.0 million, for a total of \$7.25 million for the continuation of existing studies and for new study starts. Money for new study starts, the 2002 Fisheries Resource Monitoring Plan, was first allocated by data type and geographic region to establish target budget levels for 2002 study funding:

- To maintain the multi-disciplinary approach of the Fisheries Resource Monitoring Program, two-thirds of the funding will be targeted at stock status and trends studies, and one-third at harvest monitoring and traditional ecological knowledge.
- The program also wishes to achieve an appropriate balance between the six geographic regions: Arctic/Kotzebue/Norton Sound, Yukon River, Kuskokwim River, Bristol Bay/Alaska Peninsula/Kodiak, Cook Inlet/Gulf of Alaska, and Southeast Alaska. It is recognized that, based on the distribution of Federal lands and waters, the management issues confronting the Board are greater in some regions than others. The Yukon and Kuskokwim rivers, for example, have large Federal land areas, with intensive subsistence fisheries. A portion of the funding is also allocated to inter-regional studies to address statewide concerns.

Other considerations and policy decisions entered into recommendations for 2002 study funding:

- The Technical Review Committee recommended studies that attempt to balance across species (salmon, resident species), study type (e.g., fish weirs, test fisheries, sonar, genetics, escapement, biology, harvest assessment, subsistence harvest mapping), and geographically within a region (up river, down river).
- At the direction of the Board, a minimum of 60% of the study funding is dedicated to non-Federal sources.
- The Board provided guidance on types of activities that they did not find appropriate for funding under the Fisheries Resource Monitoring Program. Activities not eligible for funding include: a) habitat protection, restoration, and enhancement; b) hatchery propagation, restoration, enhancement, and supplementation; and c) contaminant

assessment, evaluation, and monitoring. These activities on Conservation System Units would most appropriately be addressed by the land management agencies.

- In 2002, the Partners for Fisheries Monitoring Program will be implemented at a proposed budget of \$1.05 million. The Office of Subsistence Management will develop cooperative agreements to fill up to ten Partners for Fisheries Monitoring positions within Tribal, rural, or State organizations, including both fishery biologists and social scientists. These positions will help develop and implement Resource Monitoring Program studies, communicate the results of fisheries studies to various audiences (Federal Subsistence Board, Regional Advisory Councils, Office of Subsistence Management, regional organizations), and help develop the capacity of rural residents to effectively participate in the fishery management process.

Many studies approved by the Board in 2000 and 2001 were designed to continue on for several years. In 2002, approximately \$5 million is required to fund the continuation of 2000 and 2001 studies. When making study recommendations in 2001, the Committee recommended to the Board that approximately one-third of the Monitoring Program funds be made available to initiate new studies in 2002 and 2003. Using carryover balances from the Program's first year of implementation, the U.S. Fish and Wildlife Service and U.S. Forest Service are capable of providing \$2.1 million for new studies in 2002 (**Figure 1**).

In 2003, we currently estimate that \$1.2 million will be available for new studies. Unlike the 2002 process, investigation plans that are not selected for funding this year will not automatically become eligible for funding consideration next fiscal year. By insisting that investigators submit new proposals during the 2003 call for proposals, we will encourage submissions that: are current with Issues and Information Needs; addressed reviewer comments; and have updated their budgets. Investigators will need to submit new proposals requests for consideration of any new projects in 2003.

For the 2002 Fisheries Resource Monitoring Program, 120 new study proposals were submitted in February 2001. Of these, 48 were advanced for preparation of Investigation Plans. In addition, 9 studies submitted in 2001 that were not funded were advanced for reconsideration. The map below (**Map 1**) displays the geographic distribution of 57 studies advanced in 2002.

For the \$2.1 million available for new studies, the Technical Review Committee recommended 31 studies for funding in 2002, including 14 stock status and trends studies and 17 harvest monitoring and TEK studies (**Tables 1 & 2**).

The 31 studies represent a balanced mix of studies that address Regional Council concerns, improve and strengthen fisheries management, quantify harvests, employ traditional ecological knowledge, and address regulatory actions before the Board. All studies are technically sound and expand upon the science-based monitoring program initiated in 2000 and 2001. For the 2002 studies recommended for funding by the TRC, approximately 40% of the funding would be directed at Tribal and local organizations (Non-governmental Organizations or NGO), approximately 40% to ADF&G, and approximately 20% to Federal agencies (**Figure 2**).

Fisheries Resource Monitoring Program Project Commitments & Estimates (2000 - 2004)

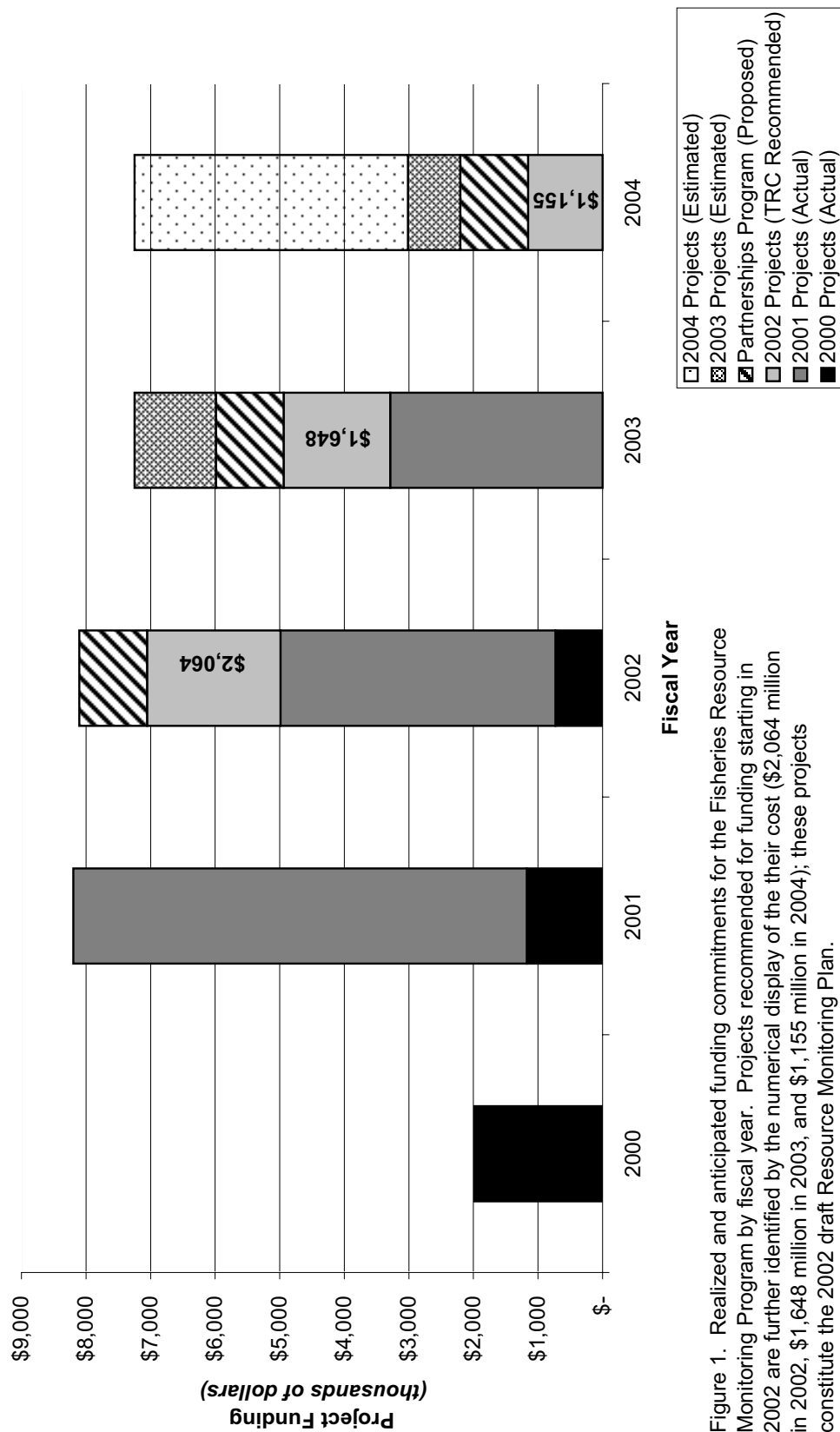


Figure 1. Realized and anticipated funding commitments for the Fisheries Resource Monitoring Program by fiscal year. Projects recommended for funding starting in 2002 are further identified by the numerical display of the their cost (\$2,064 million in 2002, \$1,648 million in 2003, and \$1,155 million in 2004); these projects constitute the 2002 draft Resource Monitoring Plan.

Map 1. Distribution of projects for funding consideration under the 2002 Fisheries Resource Monitoring Program

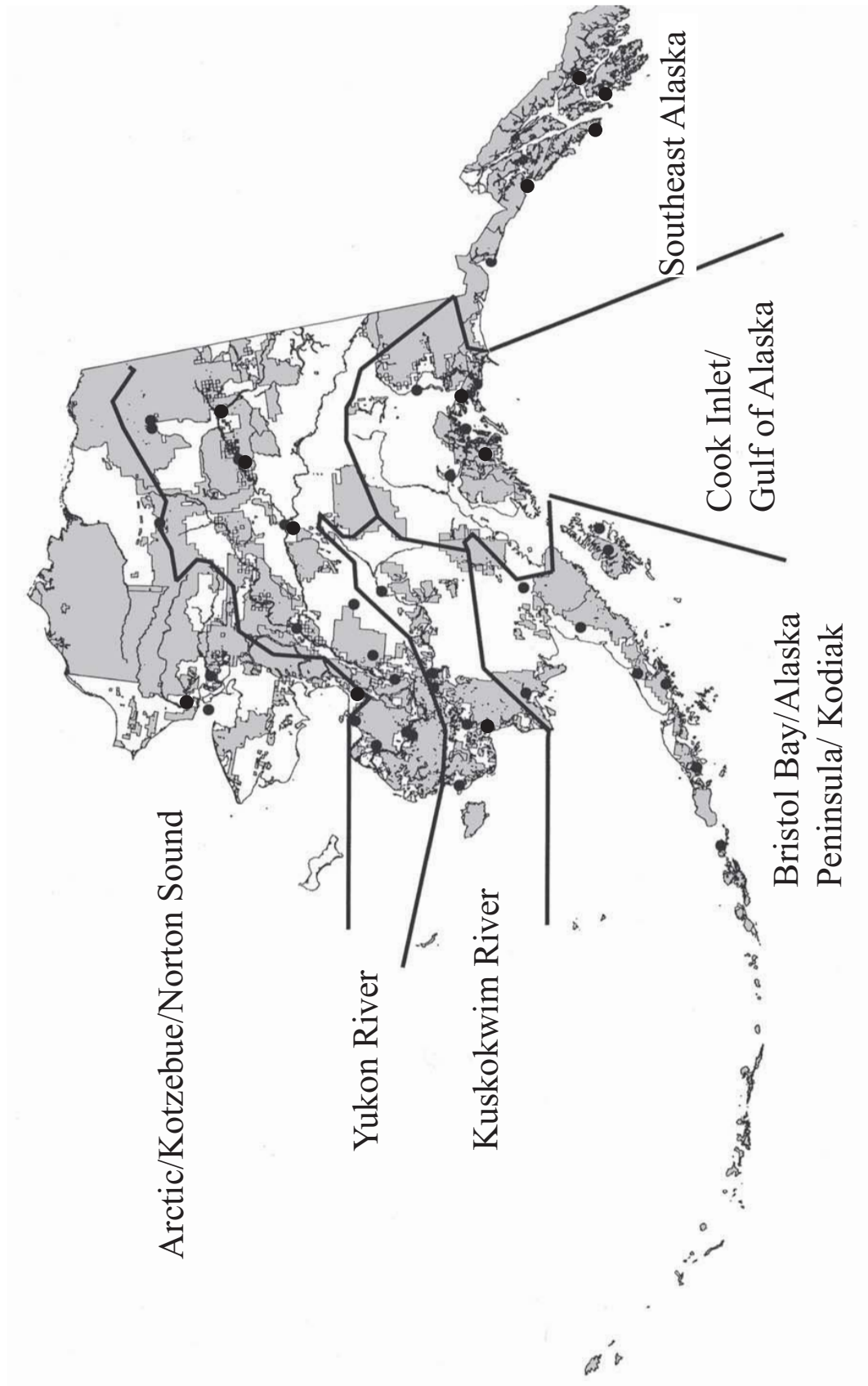


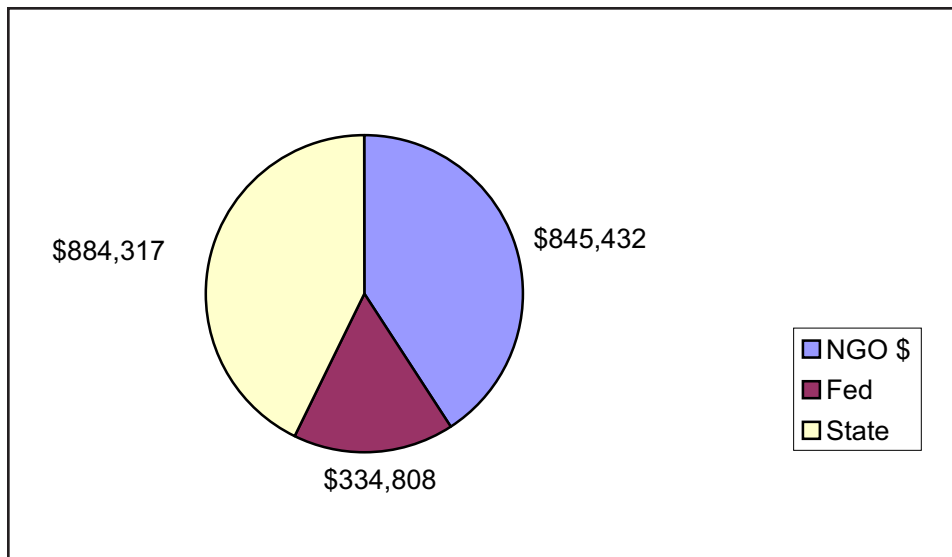
Table 1. Number of studies recommended for funding in fiscal 2002 by Technical Review Committee. Abbreviations for study information types are as follows: SST=Stock Status adn Trends, HM=Harvest Monitoring, TEK=Traditional Ecological Knowledge

Unfunded 2001															
Geographic Region	Studies			New 2002 Studies			All Studies			Recommended Studies					
	SST		Total	SST		Total	SST		HM-TEK	Total	SST		HM-TEK	Total	
Arctic, Kotzebue, Norton Sound	0	0	0	3	4	7	3	4	7	1	3	4	3	4	
Yukon River	2	0	2	4	5	9	6	5	11	3	3	6	3	6	
Kuskokwim River	0	0	0	3	4	7	3	4	7	2	3	5	2	5	
Bristol Bay, Kodiak	4	0	4	2	3	5	6	3	9	3	1	4	3	4	
Cook Inlet, Gulf of Alaska	1	1	2	3	3	6	4	4	8	1	3	4	3	4	
Southeast	1	0	1	5	4	9	6	4	10	2	3	5	3	5	
Inter Regional	0	0	0	3	2	5	3	2	5	2	1	3	2	3	
Total	8	1	9	23	25	48	31	26	57	14	17	31	26	57	

Table 2. Cost of proposals recommended for funding in 2002 by the Technical Review Committee. Funding shown in thousands of dollars

Geographic Region	SST Studies		HM-TEK Studies		All Studies	
	Target	Recommended	Target	Recommended	Target	Recommended Difference
Arctic, Kotzebue, Norton Sound	\$161.0	\$20.0	\$81.0	\$182.0	\$242.0	\$202.0 \$40.0
Yukon River	\$275.0	\$251.0	\$138.0	\$132.0	\$413.0	\$383.0 \$30.0
Kuskokwim River	\$275.0	\$283.0	\$138.0	\$111.0	\$413.0	\$394.0 \$19.0
Bristol Bay, Kodiak	\$142.0	\$134.0	\$71.0	\$91.0	\$213.0	\$225.0 -\$12.0
Cook Inlet, Gulf of Alaska	\$194.0	\$229.0	\$97.0	\$97.0	\$291.0	\$326.0 -\$35.0
Southeast	\$282.0	\$287.0	\$141.0	\$141.0	\$423.0	\$428.0 -\$5.0
Inter Regional	\$70.0	\$78.0	\$35.0	\$28.0	\$105.0	\$106.0 -\$1.0
Total	\$1,399.0	\$1,282.0	\$701.0	\$782.0	\$2,100.0	\$2,064.0 \$36.0
Percent of Grand Total	67%	62%	33%	38%		

Figure 2. 2002 Funding Distribution



Recommendations by the Technical Review Committee represent the Draft Resource Monitoring Plan for 2002, and we look forward to gaining input from the Regional Councils and the public.

How to Provide Your Comments

We invite your review and comments on the draft 2002 Fisheries Resource Monitoring Plan. Regional Council members will have an opportunity to review the Monitoring Plan during Council meetings in the fall of 2001.

The Board welcomes your comments by October 31, 2001. These will be compiled along with the Regional Council comments and will be presented to the Board when it meets in December. Written comments may be submitted to:

USFWS Office of Subsistence Management
Attn: Richard Cannon
3601 C Street, Suite 1030
Anchorage, Alaska 99503
telephone: 1-800-478-1456 Fax: 907-786-3898
e-mail: Richard_Cannon@fws.gov

ARCTIC/KOTZEBUE/NORTON SOUND REGION OVERVIEW

Issues and Information Needs

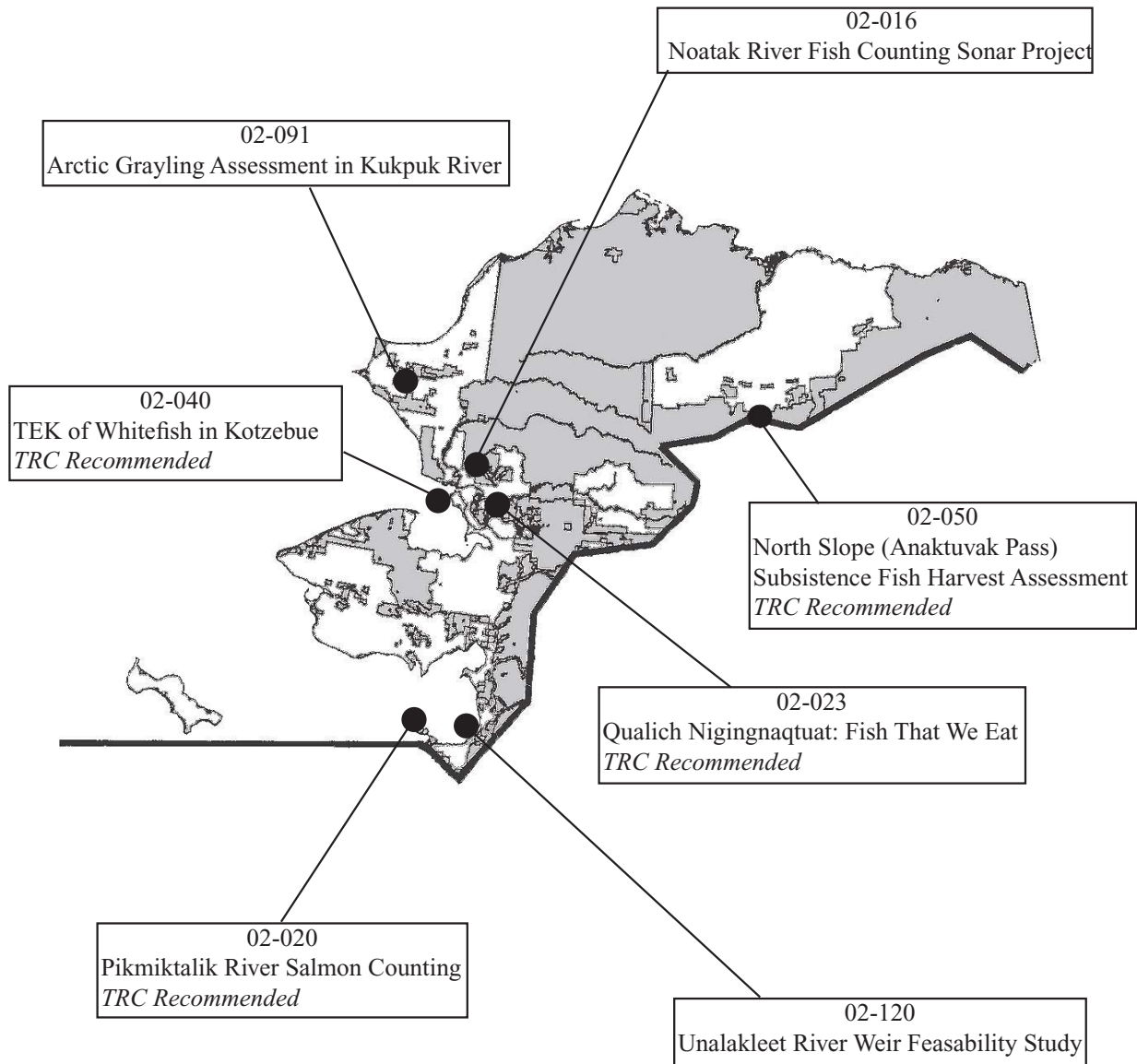
- Regional Advisory Councils for the Arctic/Kotzebue/Norton Sound region have identified a variety of issues and information needs. There continues to be substantial interest in:
 - Stock assessment for several fishes, particularly char, salmon, sheefish, and Arctic cisco;
 - Subsistence harvest patterns;
 - Traditional Ecological Knowledge documentation and use;
 - Catch-and-release sport fishing activities within the Northwest Arctic.
- The Federal Subsistence Board decided it would not fund studies dealing with fisheries propagation, restoration, enhancement or supplementation; habitat protection, restoration, and enhancement; or contaminant assessment, evaluation, and monitoring.
- Some information needs and issues previously identified by the Regional Advisory Councils concern matters that are outside federal subsistence fishery management authority (for example, coastal marine areas outside the Alaska Maritime National Wildlife Refuge), or that are more properly addressed by other federal or state agencies (for example, water quality).
- Regulatory issues can also be used to identify study issues and information needs. Seven regulatory proposals were submitted in 2002 that would affect this region. Some of these seek revisions of Customary and Traditional findings, while others seek changes to existing subsistence and sport fisheries.
- Conservation issues can also focus study efforts. Within Norton Sound, many chum salmon runs continue to be viewed as stocks of concern due to low returns. However, federal subsistence fishery management authority is very limited in this area due to the small amount of federal lands.

Studies Forwarded for Investigation Plans

- The Technical Review Committee advanced a total of seven studies for Investigation Plan development. These studies would be located throughout this region (Map 1).
- A total of \$659.2 thousand would be needed to fund these studies in fiscal year 2002, while only \$242.0 thousand is available (Tables 1, 2 and 3).
- In making funding recommendations, the Technical Review Committee considered strategic needs for the information, technical merits of the study, performance ability of investigators, and contributions to local partnership and capacity building.

Map 1. Locations of projects advanced for preparation of investigation plans

Arctic, Kotzebue and Norton Sound



*Arctic/Kotzebue/Norton Sound Region
Overview*

Table 1. Proposed recommendations of 2002 Arctic/Kotzebue/Norton Sound stock status and trends investigation plans for funding consideration. Proposed recommendations are shown with bold type, and noted with a "Yes" in the "Recommendation" column.

FIS#	Title	Recommendation	Requested Budget		
			2002	2003	2004
02-016	Noatak River Fish Counting Sonar Project	No <i>a</i>	\$338.0	\$225.0	\$225.0
02-020	Pitmiktalik River Weir Operations	Yes	\$19.8		
02-120	Unalakleet River Weir Feasibility Study	No <i>a</i>	\$19.5	\$20.0	\$20.7
GRAND TOTALS			\$377.3	\$245.0	\$245.7
TARGET BUDGET LEVELS			\$161.0	\$124.9	\$392.7
PROPOSED SELECTIONS			\$19.8	\$0.0	\$0.0

a Proposal withdrawn from further consideration by investigator. No investigation plan submitted.

Table 2. Proposed recommendations of 2002 Arctic/Kotzebue/Norton Sound harvest monitoring and Traditional Ecological Knowledge investigation plans for funding. Proposed recommendations are show with bold type, and noted with a "Yes" in the "Recommendation" column.

FIS #	Title	Recommendation	2001	2002	2003
<u>Harvest Monitoring</u>					
02-050	North Slope (Anaktuvuk Pass) Subsistence Fish Harvest Assessment	Yes	\$67.9	\$67.4	\$15.2
<u>Traditional Ecological Knowledge</u>					
02-023	Qaluich Nigingnaqtuat: Fish That We Eat	Yes	\$48.0		
02-040	Traditional Knowledge of Whitefish in Kotzebue Sound	Yes	\$66.0	\$66.0	\$0.0
02-091 <i>a</i>	Assessment of Arctic Graying in the Kukpuk River Near Point Hope	No <i>a</i>	\$100.0	\$0.0	\$0.0
GRAND TOTALS			\$281.9	\$133.4	\$15.2
TARGET BUDGET LEVELS			\$81.0	\$196.0	\$196.0
PROPOSED SELECTIONS			\$181.9	\$133.4	\$15.2

a Withdrawn from further consideration by Technical Review Committee. Investigation plan not submitted.

Table 3.

FY 2002 Arctic, Kotzebue, Norton Sound Projects

Region 1. Arctic, Kotzebue, Norton Sound

Type A. Stock, Status, and Trends

Doc #	Agency/Org	Title	NGO \$	Fed\$	State \$	Total \$
02-020	Stebbins, USFWS, NPS	Pikmiktalik River Salmon Counting Site Surveys	\$13,300.00	\$6,500.00	\$0.00	\$19,800.00
Total			\$13,300.00	\$6,500.00	\$0.00	\$19,800.00

Type B. Harvest Monitoring/TEK

Doc #	Agency/Org	Title	NGO \$	Fed\$	State \$	Total \$
02-023	Private	Qaluich Nigingnaqtuat, Fish That We Eat.	\$47,990.00	\$0.00	\$0.00	\$47,990.00
02-040	Maniilaq, ADFG-SD	Traditional Ecological Knowledge of Whitefish in Kotzebue Sound	\$28,227.00	\$0.00	\$37,726.00	\$65,953.00
02-050	ADFG-SD, NSB, Anaktuvuk	North Slope (Anaktuvuk Pass) Subsistence Fish Harvest Assessment	\$36,573.00	\$0.00	\$31,355.00	\$67,928.00
Total			\$112,790.00	\$0.00	\$69,081.00	\$181,871.00
Grand Total			\$126,090.00	\$6,500.00	\$69,081.00	\$201,671.00

Recommendation Process—Stock Status and Trends Studies

- Three studies were advanced for Investigation Plan development in the Stock Status and Trends category (Table 1), but two of these were withdrawn from further consideration by the investigators. All three studies would address one general issue: *Distribution, Abundance, and Life History of Fish Species*, and all would concern salmon assessment.
- Funding requested for the three Stock Status and Trends studies advanced for investigation plans totaled approximately \$377.3 thousand for fiscal year 2002, while a total of \$161.0 thousand is available.
- The Technical Review Committee recommended that the one investigation plan submitted be funded in fiscal year 2002 with a reduced scope of work and budget as well as addition of a partner with experience in resistance board weirs (Table 1). The original investigator agreed to adopt these recommendations.
- The recommended project would consist of a single year of feasibility work to determine the feasibility of using various methods, including a resistance board weir, to count salmon entering Píkmiktalik River.
- The Technical Review Committee further recommended that unallocated 2002 Stock Status and Trends funds be used to fund additional Harvest Monitoring and Traditional Ecological Knowledge studies for this region.
- The Technical Review Committee recommended one Inter-Regional Stock Status and Trends study for funding that would directly benefit subsistence fishery management within this region. This study would develop protocols and computer software to determine sustainable subsistence salmon harvest levels.
- The general issue of hook-and-release sport fishing mortality could be addressed by an Inter-Regional Stock Status and Trends study that would provide a literature review and convene a working group to develop protocols and recommendations for future studies. The Technical Review Committee did not recommend this study for funding due to budget limitations and the greater perceived strategic importance of other Inter-Regional studies (See Inter-Regional Overview for more details).

Recommendation Process—Harvest Monitoring and Traditional Ecological Knowledge Studies

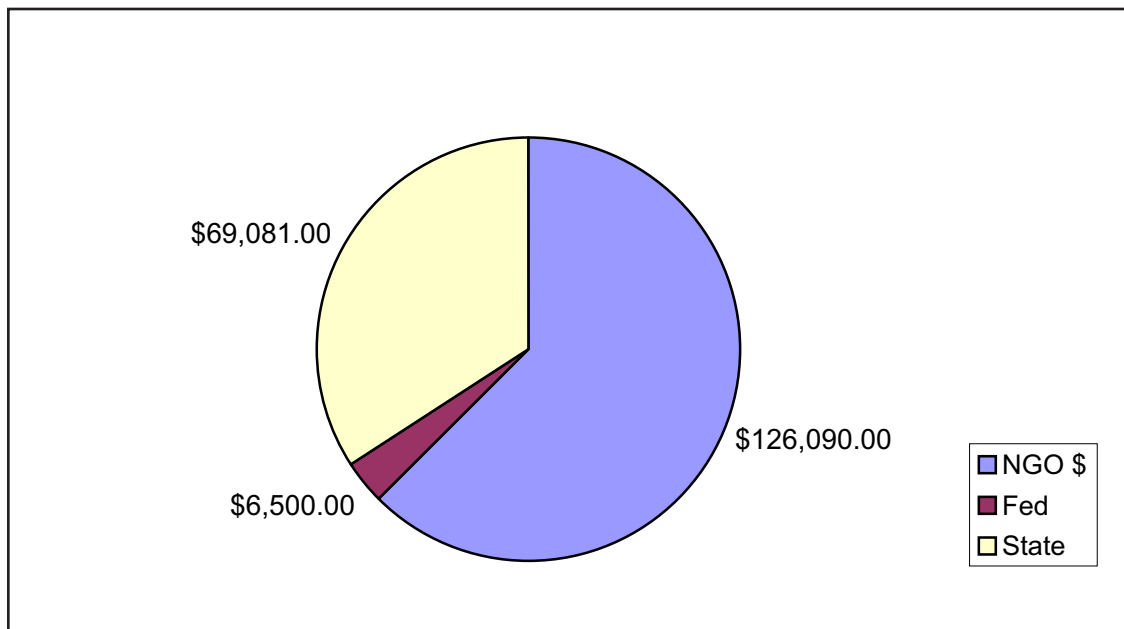
- Four studies were advanced for Investigation Plan development in the Harvest Monitoring and Traditional Ecological Knowledge categories (Table 2), but investigators for one of these did not submit an investigation plan. These studies would address three general issues: Subsistence Harvest Patterns, Subsistence Use and Practices, and Long Term Trends and Sources of Variation.

- Funding requested for the four Harvest Monitoring and Traditional Ecological Knowledge studies advanced for investigation plans totaled \$281.9 thousand for fiscal year 2002, while a total of \$81.0 thousand was available
- The Technical Review Committee recommended funding for three studies in fiscal year 2002 (Table 2). Total cost for these projects in fiscal year 2002 is anticipated to be about \$181.9 thousand, which is about 120% more than the target budget level. These costs would be covered with unallocated Stock Status and Trends funds for this region.
- The Technical Review Committee recommended one Inter-Regional Harvest Monitoring study for funding that would directly benefit subsistence fishery management within this region. This study would continue efforts begun in fiscal year 2000 to develop a fisheries information database for the Arctic, Yukon, and Kuskokwim regions (See Inter-Regional Overview for more details).

Funding Recommendation Summary

- Four studies, one Stock Status and Trends study and three Harvest Monitoring/Traditional Ecological Knowledge studies, were recommended for funding with a cost of \$201.7 thousand in fiscal year 2002 (Tables 1, 2, and 3).
- About 97 % the funding for these four studies would go to non-government organizations and state agencies (Chart 1).

Chart 1. 2002 Funding Distribution



- About 25% of the funds for these four studies (\$48.0 thousand) would be used for local hire, while investigators would contribute \$3.5 thousand in matching funds (Table 4).
- Investigation plans not selected for funding this year will not automatically become eligible for funding consideration next fiscal year. Investigators need to submit new proposals requests to fund this work in fiscal year 2003.

Study Recommendations, Descriptions, and Justifications

- Additional details about each project can be found in the sections that follow. For each project, we have included the Technical Review Committee recommendation, a project description, and the technical justification for the recommendation.
- Study information is organized into two sections. The first contains Stock Status and Trends studies information, while the second contains Harvest Monitoring and Traditional Ecological Knowledge studies information. Within each section, studies are organized by their assigned numbers, in increasing order.

Table 4.

FY 2002 Local Hire and Matched Funds Report Arctic, Kotzebue, Norton Sound

Region 1. Arctic, Kotzebue, Norton Sound

Type A. Stock, Status, and Trends

Doc #	Agency/Org	Title	Local Hire \$	Matched \$
02-020	Stebbins, USFWS, NPS	Pikmiktalik River Salmon Counting Site Surveys	\$5,000.00	\$3,500.00
Total			\$5,000.00	\$3,500.00

Type B. Harvest Monitoring/TEK

Doc #	Agency/Org	Title	Local Hire \$	Matched \$
02-023	Private	Qaluich Ningingnaqtuat, Fish That We Eat.	\$10,000.00	\$0.00
02-040	Maniilaq, ADFG-SD	Traditional Ecological Knowledge of Whitefish in Kotzebue Sound	\$18,500.00	\$0.00
02-050	ADFG-SD, NSB, Anaktuvuk	North Slope (Anaktuvuk Pass) Subsistence Fish Harvest Assessment	\$14,500.00	\$0.00
Total			\$43,000.00	\$0.00
Grand Total			\$48,000.00	\$3,500.00

02-020

Pikmiktalik River Salmon Counting Site Surveys

Investigator(s): Stebbins Community Association (IRA Council); Fairbanks Fishery Resource Office, U.S. Fish and Wildlife Service; Nome Field Office, National Park Service

FY2002 Budget: \$ 19,800.00

Total Budget (1 year): \$ 19,800.00

Geographic Area: Arctic, Kotzebue, Norton Sound **Information Type:** SST

Issues:

Much of the subsistence harvest of the communities of Stebbins and St. Michael is conducted on the salmon stocks of the Pikmiktalik River. However, there are currently no projects that provide estimates of the number of chinook, chum (summer and fall), pink or coho salmon entering this river to spawn. Local residents strongly feel that availability of in- and postseason escapement information would improve management of these fishery resources.

Objectives:

- 1) Survey sites within the Pikmiktalik River to assess the feasibility of operating a resistance board weir, picket weir, or tower(s) to estimate the number of salmon entering the river to spawn.
- 2) Determine methods and costs for following years based on site survey results.

If a weir or tower project proves to be feasible, objectives for future years would include:

- 1) Design and construction of a weir or tower(s) for use at the Pikmiktalik River site.
- 2) Installation of a weir or tower(s) at the counting site.
- 3) Provision of daily and total annual estimates of salmon passing the counting site.
- 4) Estimation of the age, sex, and size composition of salmon passing the counting site.
- 5) Recording weather and water conditions at the counting site.
- 6) Estimation of the age, sex, and size composition of salmon harvested in the river by the subsistence fishery.

Methods:

Investigators would travel to the Pikmiktalik River to determine the feasibility of installing and operating a resistance board weir, picket weir, or counting tower(s) to estimate the number of salmon entering this river to spawn. Efforts will be made to locate a counting site as close to the river mouth as possible, so that counts would be made below areas in which salmon spawn. One potential site to be investigated would be about one and one half river miles from the mouth, near an important subsistence fish camp. Information obtained from each site examined would

include location, river width, river depth, bottom substrate, water velocity, water clarity, riverbank stability, and land ownership. Stream discharge data will be collected at 0.5 ft stage height increments using a Marsh-McBirney portable water flow meter and top-setting wading rod using methods previously developed by U.S. Fish and Wildlife Service. A stream depth profile would be made at each site by measuring the water depth at 10 ft intervals across the river. To determine maximum flow rates and water depths that would be encountered during a counting season, it may be necessary to visit candidate sites more than once to take measurements.

Deliverables/Products:

A report consisting of site survey information and recommendations for a salmon counting project would be submitted at the end of the season to the Office of Subsistence Management, Fisheries Information Services Division.

Experience of Investigator(s):

Stebbins Community Association staff has some experience in conducting salmon surveys. They received funding from the Native American Rights Fund in 1995 to conduct ground and aerial surveys of the Pikmiktalik and Kogok Rivers. Residents have much knowledge about the local river systems, and will apply this to make this study successful.

U.S. Fish and Wildlife Service, Fairbanks Fishery Research Office, and National Parks Service have staff with extensive experience using a variety of methods and techniques, including resistance board weirs, to gather information about spawning salmon stocks. The Fairbanks Fishery Research Office currently operates weirs on the Gisasa River and Henshaw Creek within the Yukon River drainage to count summer chum and chinook salmon as they return to spawn.

Partnerships/Collaboration/Consultations:

This project would develop capacity within Stebbins Community Association and the community of Stebbins to actively participate in stock assessment activities. Planned activities would also provide employment for and training of local residents as field technicians.

Justification:

Pikmiktalik River is an important local subsistence site for local residents. Local communities and the Regional Advisory Council are very interested in having a salmon escapement enumeration project operated on this river. Stebbins Community Association conducted salmon spawning surveys with funding from another source in 1995, but has not used a resistance board weir to count salmon. The technical feasibility of this project largely depends upon the presence of a suitable weir site in this drainage. At least one agency biologist familiar with this area thought there was a good chance of finding a suitable site for a weir, and Stebbins Community Association was able to operate a partial weir, with some success, to divert salmon under a counting tower. However, detailed site information must be obtained, including a determination of whether water flow conditions during the time salmon enter this river would make it possible

to maintain a resistance board weir, before a weir project can be properly designed and a budget developed.

Upon the recommendation of the Technical Review Committee, the original investigation plan was revised as a one-year weir feasibility study, and partners with experience in constructing, installing and operating resistance board weirs were found. Planned activities for the revised study would result in a decision on whether a resistance board weir, picket weir, or counting tower operation would be feasible, a recommendation on which method to use, and an accurate estimate of construction and operational costs. Stebbins Community Association appears to have the necessary experience and expertise to administer this project, while the U.S. Fish and Wildlife Service and National Parks Service have the technical expertise needed to serve as effective partners and mentors. Consultations among local organizations and the Regional Advisory Council have occurred, but further consultations among the new co-investigators would be needed to finalize the revised investigation plan, including its budget components. It is not anticipated that costs would change greatly from those estimated in the revised plan.

02-023

Qualuich Nigingnaqtuat: Fish That We Eat

Investigator(s): Anore Jones, Independent Author

FY2002 Budget: \$ 47,990.00

Total Budget (1 year): \$ 47,990.00

Geographic Area: Arctic/Kotzebue/Norton Sound **Information Type:** HM/TEK

Issues:

There is a lack of culturally relevant resource books available for government agencies, schools, and the general public. This is also a continuing loss of valuable Traditional Ecological knowledge information regarding such topics as resource harvesting, use and availability. The information that would be available in this manual would be immediately useful and would help in development of comprehensive approach to managing subsistence fish use within this area. With more detailed information about local subsistence fisheries, management agencies would be able to better understand and incorporate the complexities of subsistence needs into drawing boundaries, formulating regulations, and designing research. Availability of the manual would promote better communication and understanding among subsistence users, agencies, and the general public.

Objectives:

- 1) Write a draft manuscript for a manual of fish use in northwestern Alaska.
- 2) Create and oversee an Elders' Review Project.
- 3) Add Elders' Review Project information to the manuscript.
- 4) Illustrate the manual with photos and drawings.

Methods:

The investigator would prepare a manual of fish use in northwestern Alaska to make Traditional Ecological Knowledge information about subsistence fish foods easily available to agencies, schools, and individuals. A rough draft of the manual, in Microsoft Word, would be written during the period January through March 2002. The contents of the manual would draw heavily from information collected by the investigator over the past 40 years. Methods used by the investigator to gather this information closely agree with currently accepted guidelines for conducting Traditional Ecological Knowledge studies in the Arctic. Additional information would be added to the manual from an Elders' Review Project that would begin January 2002 and end November 2002. For this project, the investigator would select specific Elders based on their fish wisdom and ability to communicate with the investigator. In some cases this would be a team composed of an Elder and a younger adult friend who could translate Inupiat as well as

write and speak English. These people would assist in adding specific missing information and editing the manuscript to guarantee accuracy and ensure correct presentation of the information. Many graphics would be used to better describe fishing and food preparation and processing. Photos would be selected from the investigators slide collection and from other sources. The investigator may also make drawings or hire someone else to illustrate procedures. These graphics would not only make the manual more interesting to use, but would also make it more informative for outsiders wishing to learn about local fish, the environment, and subsistence experiences.

Deliverables/Products:

At the end of the funding period, the investigator would provide a report of the information contributed by the Elders' Review Project, and of progress towards completion of a book. The actual end product, hopefully available by the end of 2003, would be a professionally designed resource manual that comprehensively documents traditional fishing and fish use in northwest Alaska, with a primary emphasis on subsistence food use.

Experience of Investigator(s):

The investigator has had four years of biology courses at University of Alaska with emphasis on botany, and some courses and work in anthropology and sociology. Further experience in scientific thought and research design came from involvement and employment in Project Chariot in 1960, as well as two summers of undergraduate research directed by Dr. John Marr in Boulder, Colorado. The investigator has developed a deep interest and respect for the Inupiat culture, people, and their lands, including a fondness for their traditional foods. This has evolved over a forty-year period that began in 1960 and included 23 years of residence in the Kotzebue-Kobuk Valley area.

Partnerships/Collaboration/Consultations:

The investigator has developed many close friendships and respected acquaintances throughout northwestern Alaska. The idea of incorporating Inupiat food wisdom into useful manuals evolved from interactions with individuals. Communities at large were not directly involved until they came forward to support the investigator's request for funding. During this same time, the investigator communicated with various schools, organizations, and agencies in northwestern Alaska. These consultations would continue during the study and would promote increased communication and respect for understanding subsistence issues.

Justification:

This project would be an excellent investment for several reasons. It fills an information gap about subsistence food use in northwestern Alaska. This work would address subsistence fisheries in federal conservation units such as Cape Krusenstern National Monument, Noatak National Preserve, Kobuk Valley National Park, Selawik National Wildlife Refuge, and Bering Land Bridge National Preserve. The investigator's first book, on subsistence plan use, is excellent and comprehensive and would more or less serve as a template for this one. The National Park

Service is currently providing funding to the investigator to begin this project. Funding from the Fishery Resource Monitoring Program would allow the investigator to continue and expand this work. This study has received more letters of support from local organizations, communities and individuals than any other study proposed for 2002. The investigator's consultations have been extensive and her grass-roots support is broadly based. While this project is somewhat unusual in that the research has for the most part already been completed, the investigator has provided detailed of her research methods that demonstrate their viability, as well as an example of her prior work. The investigator has continued to work directly with the communities to provide Elders with opportunities to direct the final outcome of the project. The traditional information she has gathered is rapidly passing away. Her project would be a valuable contribution to preserving this Traditional Ecological Knowledge.

02-040

Traditional Ecological Knowledge of Whitefish in Kotzebue Sound

Investigator(s): Division of Subsistence, Alaska Department of Fish and Game; Maniilaq Association; Selawik National Wildlife Refuge, U.S. Fish and Wildlife Service

FY2002 Budget: \$ 65,953.00

Total Budget (2 years): \$ 131,802.00

Geographic Area: Arctic/Kotzebue/Norton Sound **Information Type:** HM/TEK

Issues:

This project addresses the need to document traditional Inupiat knowledge of fish resources as an initial step towards incorporating this knowledge into biology-based fisheries management. As a key subsistence resource in the region, and one that has received little attention from scientific researchers, whitefish are an ideal subject for a Traditional Ecological Knowledge project. Whitefish management issues receiving considerable public discussion in recent months include a regulatory proposal to allow whitefish nets to completely block streams and the impact of increasing beaver numbers on whitefish populations.

Objectives:

- 1) Collect Inupiat knowledge of whitefish, including life history, ecology, seasonal movement patterns, taxonomy, interaction with beavers, long-term trends in abundance, and traditional conservation practices.
- 2) Develop maps depicting important whitefish habitat and subsistence fishing areas in the vicinity of study communities.
- 3) Enter Traditional Ecological Knowledge information into a useable computer-searchable database.
- 4) Provide experience to community residents in collecting Traditional Ecological Knowledge information.
- 5) Train Maniilaq Association staff and tribal staff in use of the database.

Methods:

The primary data collection method would be interviews with knowledgeable individuals in study communities. Interview topics would include whitefish life history, ecology season movement patterns, taxonomy, and interaction with beavers, trends in abundance, and traditional conservation practices. Interviews would be recorded whenever possible and when agreed to by the respondent. Respondents would be paid for their time. One or more research assistants would be hired in each study community to assist with interviews. Maps would be used during interviews to record locations of spawning areas, key whitefish harvesting areas, areas impacted by beaver

activity, and other relevant information. To the extent possible, researchers would travel by boat with key respondents to observe and map key whitefish habitat and fishing areas. Interview materials would be entered into a computerized, searchable database using AskSam© software. Mapped information would be compiled into a Geographic Information System database.

Two study communities would be selected in each of the two years of the project for a total of four communities. Selawik and Noatak are proposed as study communities for the first year of the project. Noorvik and Sisualik are proposed as study communities for the second year. Research in these communities would be conditional upon approval by local tribal councils.

Deliverables/Products:

An annual progress report would be prepared at the end of each of the two years of this project. At the project's conclusion, a final report, with maps, would be prepared describing the fulfillment of objectives and summarizing the results of the research. In addition, a computer search able database would be produced on Traditional Ecological Knowledge of whitefish with a copy provided to Office of Subsistence Management, Fisheries Information Services Division.

Experience of Investigator(s):

The Division of Subsistence, Alaska Department of Fish and Game investigator has conducted research in northwestern Alaska since 1986, is well versed in a variety of methods used in subsistence studies, and has often collaborated with tribal organizations in research projects.

Maniilaq Association's investigator is an Inupiat resident of the region. He has traveled extensively throughout the region, is an accomplished hunter and fisher, and has been involved with resource management issues for several decades.

The Selawik National Wildlife Refuge, U.S. Fish and Wildlife Service, investigator has several years of experience organizing and supervising field projects, and has worked closely with the public in gathering and distributing information.

Partnerships/Collaboration/Consultations:

This work would be a collaborative effort among a regional organization, a state resource management agency, and a federal resource management agency. Local residents would be hired as research assistants in study communities to assist with fieldwork. The project relies on information provided by knowledgeable local residents. All Project Participants would gain experience in documenting Traditional Ecological Knowledge of fishery resources.

Justification:

This study would obtain Traditional Ecological Knowledge information on whitefish in Kotzebue Sound. This is an issue and information need formally identified this year by the Regional Advisory Council for this area. The work would provide information on subsistence use by four communities within several federal conservation units in northwestern Alaska. This work addresses an important subsistence fishery resource for residents of this region. Study objectives

are clear and achievable, and the study design is adequate to achieve these objectives. Methods are technically sound, and analytic procedures are appropriate to the work. Products would include a written report with maps illustrating whitefish distribution and subsistence use. The information would be shared appropriately. The investigator with the Division of Subsistence, Alaska Department of Fish and Game, has a proven track record and has successfully completed a number of similar studies. The experience and training of the co-investigators would also add greatly to the successful conduct of this work. No letters of support were received, but appropriate local consultations have been completed. The study would make sue of local residents to assist with fieldwork, and the study would be done using a partnership of local organization with government agencies.

02-050

North Slope (Anaktuvuk Pass) Subsistence Fish Harvest Assessment

Investigator(s): Division of Subsistence, Alaska Department of Fish and Game; Simon Paneak Memorial Museum, Planning Department, North Slope Borough; City of Anaktuvuk Pass

FY2002 Budget: \$ 67,928.00

Total Budget (3 years): \$ 150,506.00

Geographic Area: Arctic/Kotzebue/Norton Sound **Information Type:** HM/TEK

Issues:

The community of Anaktuvuk Pass is concerned about potential effects of industrial development on availability and access to subsistence resources. However, there is no comprehensive ethnographic or detailed information on subsistence fisheries for this community. A study conducted in 1996 provided an estimate of average annual harvest of about 1,300 fish, which would comprise about 4 percent of the diet of community residents. Dolly Varden, lake trout, and grayling are the fish species of primary importance, although burbot and several species of whitefish are also harvested. Residents are particularly concerned about protecting wintering areas and maintaining Dolly Varden populations, since this species is most important in terms of numbers harvested and local preference.

Objectives:

- 1) Estimate total annual subsistence harvest by Anaktuvuk Pass residents of all fish species, including Dolly Varden.
- 2) Compile information on fishing locations, productivity, effort, gear types, and participation rates.
- 3) Update community household lists and identify fishing households.
- 4) Collect descriptive Nunamiut natural history information on key fish species utilized by Anaktuvuk Pass residents.
- 5) Sample Dolly Varden from subsistence harvests to determine, based on genetic analyses, stock composition and seasonal movement patterns.

Methods:

Household surveys, using standard methods and protocols, would be conducted to gather information on fish species harvested, harvest locations, harvest timing, gear used, and sharing. Key informant interviews, using standardized questions, would be done to collect information on natural history, distribution, abundance and local use of the most commonly harvested fish species. Collected information would be used to develop a descriptive Traditional Ecological Knowledge report and a quantitative fishery database.

Prior to collecting data, Division of Subsistence staff would work with the North Slope Borough, Departments of Planning and Wildlife Management to obtain community approval and finalize the study design. Division of Subsistence staff would train local residents as survey monitors, develop survey instruments, conduct key informant interviews, and write an annual and final report. A local resident would be hired as a technician to assist with harvest surveys and collection of descriptive information. North Slope Borough, Department of Wildlife Management staff may assist with study implementation, oversight, and reporting. The Curator-Ethnohistorian at the Simon Paneak Memorial Museum would be responsible for collecting of Traditional Ecological Knowledge concerning key subsistence fish species for inclusion in the local fishery assessment.

In addition to collecting harvest information, fin clips would be taken from Dolly Varden harvested by several different individuals. Fin clips would be sent to the U.S. Fish and Wildlife Service Fish Genetics Laboratory for analysis as part of North Slope Dolly Varden study being conducted by Alaska Department of Fish and Game, Division of Sport Fish. Analyses would be used to estimate stock composition of harvests and to investigate seasonal migration patterns.

Deliverables/Products:

An annual report summarizing information collected in 2002 will be submitted. A final report, containing information from both study years, would be produced with two main sections. The first section would be titled “2002-2003 Subsistence Fishery Harvest Assessment, Anaktuvuk Pass, Alaska”. It would contain annual harvest estimates for all species, mapped fishing locations, technology used by season and fish species, qualitative context information from survey results, key respondent surveys, and field observations of the fishery. The second section would be titled “Nunamiut Observations on Fish and Fishing in the Central Brooks Range, Alaska”. It would contain Traditional Ecological Knowledge information on char and other fishes in the central Brooks Range and northern foothills. In addition, fin clips collected from char harvested in the winter during 2002 and 2003 would be sent to the U.S. Fish and Wildlife Service Fish Genetics Laboratory for mixed stock analysis.

Experience of Investigator(s):

The Division of Subsistence, Alaska Department of Fish and Game has staff with extensive experience conducting subsistence research on the North Slope.

The Curator and Ethnohistorian at the Simon Paneak Memorial Museum, Planning Department, North Slope Borough, has extensive experience collecting and disseminating local traditional resource and site information in Anaktuvuk Pass and other North Slope Borough communities.

The North Slope Borough, Department of Wildlife Management, has several senior staff with extensive experience in the collection and reporting of field data from North Slope Borough communities, including a study on Anaktuvuk Pass.

The City of Anaktuvuk Pass has staff with training and experience in collecting local resource

use information for the North Slope Borough Department of Wildlife Management. Local residents would provide insights and information on cultural dimensions of this fishery that would otherwise be difficult to obtain.

Partnerships/Collaboration/Consultations:

This work would consist of a partnership among Alaska Department of Fish and Game, North Slope Borough and the City of Anaktuvuk Pass. The work would further develop existing capacity within the North Slope Borough and the community of Anaktuvuk Pass to actively participate in comprehensive harvest assessment and Traditional Ecological Knowledge projects as well as the resource management process. Local harvesters and resource experts, including elders, in Anaktuvuk Pass would directly participate in providing important information through meeting and interviews. One or more residents would also be hired and trained to serve as field technicians and would also be available to assist in similar future projects.

Justification:

This study would address subsistence fisheries occurring within Gates of the Arctic National Park. Investigators would estimate total annual subsistence harvest of all fishes by Anaktuvuk Pass residents, and would compile information on fishing locations, productivity, effort, gear types, and participation rates; update community household lists; and sample Dolly Varden harvests to collect genetic samples. Study objectives are generally clear and achievable. Harvest monitoring and Traditional Ecological Knowledge aspects seem appropriately designed, and would follow established protocols developed for similar studies. The study's value would be increased if investigators provided an additional product: a map illustrating management areas for Dolly Varden on the North Slope, including anadromous streams used as spawning, rearing or wintering areas.

Further clarification is needed for the proposed genetics objective of this study. The investigation plan states that this study component would be part of an Alaska Department of Fish and Game, Division of Sport Fish, study on Dolly Varden genetics. While the specific study was not cited, this seems to refer to study FIS 01-113, Eastern North Slope Dolly Varden Genetic Stock Identification and Stock Assessment. The investigation plan for that study references a "companion project proposed by ADF&G Subsistence Division" to "estimate subsistence harvests of Dolly Varden in Kaktovik and collect genetic samples", but it does not mention similar efforts for Anaktuvuk Pass. If investigators of study FIS 02-050 wish to keep the genetics objective in their investigation plan, they need to consult with the investigator of study FIS 01-113 to determine whether analysis of Dolly Varden fin clip samples from Anaktuvuk Pass harvests can be integrated into the existing schedule and budget for study FIS 01-113. This should include a decision on what questions or hypotheses would be addressed with Anaktuvuk Pass samples, a more formal sampling design for obtaining fin clips, and determination of costs for obtaining, shipping, processing, and analyzing fin clip samples and information. An added difficulty with this objective is that genetic baseline collections and analyses for study FIS 01-113 have not been completed. This means it is not yet possible to determine the scale at which populations can be identified. If an Anaktuvuk Pass harvest genetics component is retained and more fully described, the Technical Review Committee should have the opportunity

to evaluate it.

The investigators have the technical and administrative expertise to complete the harvest monitoring and Traditional Ecological Knowledge components of this study, and have a long track record of similar successful projects. Partnerships and capacity building aspects of this study would be very strong, with Alaska Department of Fish and Game, North Slope Borough, and City of Anaktuvuk Pass working together to meet objectives. There is support in the community for the study as well as from the Regional Advisory Council for this region.

INTER-REGIONAL OVERVIEW

Issues and Information Needs

- A number of Regional Advisory Councils have identified issues and information needs that apply to more than one region or have statewide application. There is continued interest in:
 - Organization of existing, as well as new, fisheries information in a way that can be easily located and obtained by Tribal, State and Federal interests;
 - Development of consistent methods for subsistence harvest monitoring and conducting Traditional Ecological Knowledge studies;
 - Improvement of methods used to set salmon spawning goals and sustain subsistence harvests;
 - Expanded communication and coordination among regions to better achieve resource stewardship and more effectively deploy program funds through coordinated planning.
- The Federal Subsistence Board decided it would not fund studies dealing with hatchery propagation, restoration, enhancement, and supplementation; habitat protection, restoration, and enhancement; or contaminant assessment, evaluation, and monitoring.
- Regulatory issues can also be used to identify issues and information needs. Two statewide regulatory proposals were submitted in 2002. One seeks changes to existing subsistence fisheries practices, while the other seeks to establish a new Federal subsistence permit for marine fishes.

Studies Forwarded for Investigation Plans

- The Technical Review Committee advanced a total of five studies for Investigation Plan development. A total of \$178.1 thousand would be needed to fund these studies in fiscal year 2002, while only \$105.0 thousand is available (**Tables 1, 2, and 3**).
- In making funding recommendations, the Technical Review Committee considered strategic needs for the information, technical merits of the study, performance ability of investigators, and contributions to local partnership and capacity building.

Recommendation Process—Stock Status and Trends Studies

- Three studies were advanced for Investigation Plan development in the Stock Status and Trends category (**Table 1**). Each of these studies addresses a different general issue: Subsistence Fishery Management Practices, Fishery Information Access, and Catch-And-Release Fish Mortality.

Table 1. Proposed recommendations of 2002 Inter-Regional stock status and trends investigation plans for funding consideration. Proposed recommendations are shown with bold type, and noted with "Yes" in the "Recommendation" column.

FIS #	Title	Recommendation	Requested Budget		
			2002	2003	2004
02-025	Development of General Method for Calculation of Sustainable Subsistence Harvest	Yes	\$45.7	\$74.7	\$48.4
02-069	Develop Shared AYK Fishery Database	Yes ^a	\$31.9		
02-071	Strategy for Assessing Release Mortality of Sport-Caught Fish in Western and Interior Alaska	No	\$59.0	\$187.2	
GRAND TOTALS			\$136.6	\$261.9	\$48.4
TARGET BUDGET LEVELS			\$70.0	\$159.7	\$159.7
PROPOSED SELECTIONS			\$77.6	\$74.7	\$48.4

^a This proposal reached the investigation plan stage in 2001 as study 01-016. Modifications in 2002 greatly lowered cost.

Table 2. Proposed recommendation of FY 200 Inter-Regional harvest monitoring and Traditional Ecological Knowledge investigation plans for funding consideration. Proposed recommendations are shown with bold type, and noted with "Yes" in the "Recommendation" column.

FIS #	Title	Recommendation	Requested Budget		
			2002	2003	2004
02-043	Alaska Subsistence Fisheries Database GIS Integration	Yes	\$27.5		
02-047	Alaska Subsistence Salmon Harvest Timing (Phase 1): Bristol Bay, Chignik District, Cook Inlet, and Kuskokwim Drainage	No	\$14.0	\$14.5	
GRAND TOTALS			\$41.5	\$14.5	\$0.0
TARGET BUDGET LEVELS			\$35.0	\$0.7	\$79.9
PROPOSED SELECTIONS			\$27.5	\$0.0	\$0.0

Table 3.

FY 2002 Inter Regional Projects

Region 7. Inter regional						
Type A . Stock Status & Trends						
Doc #	Agency/Org	Title	NGO \$	Fed\$	State \$	Total \$
02-025	UAF, UW	Development of general method for calculation of sustainable subsistence harvest	\$45,741.00	\$0.00	\$0.00	\$45,741.00
02-069	ADFG-CFD	Develop Shared Fishery Database	\$0.00	\$0.00	\$31,900.00	\$31,900.00
02-071	ADFG-SFD, USFS	Assessment of Scientific Studies Relating to the Practice of Catch-and-Release Fishing in Western and Interior Alaska	\$0.00	\$0.00	\$59,000.00	\$59,000.00
Total			\$45,741.00	\$0.00	\$90,900.00	\$136,641.00
Type B. Harvest Monitoring/TEK						
Doc #	Agency/Org	Title	NGO \$	Fed\$	State \$	Total \$
02-043	ADFG-SD	Alaska Subsistence Fisheries Database GIS Integration	\$0.00	\$0.00	\$27,525.00	\$27,525.00
02-047	ADFG	Alaska Subsistence Salmon Harvest Timing (Phase I): Bristol Bay, Chignik District, Cook Inlet, and Kuskokwim Drainage	\$0.00	\$0.00	\$13,991.29	\$13,991.29
Total			\$0.00	\$0.00	\$41,516.29	\$41,516.29
Grand Total			\$45,741.00	\$0.00	\$132,416.29	\$178,157.29

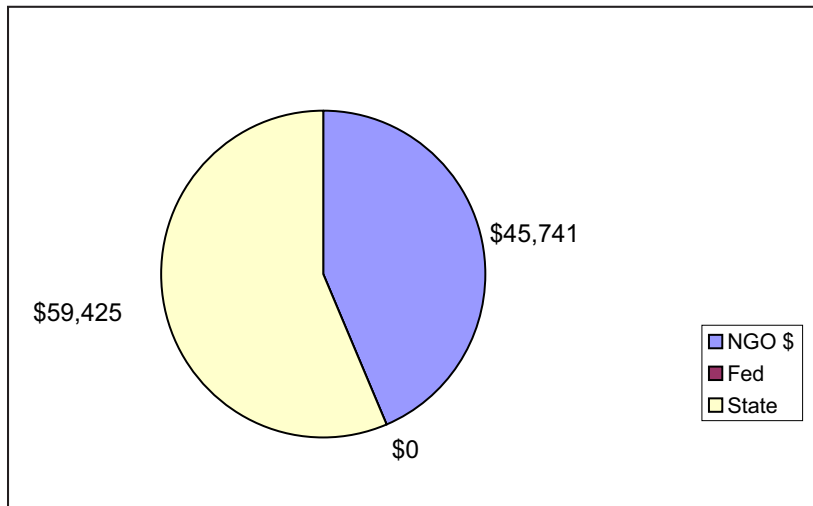
- Funding requested for the three stock status and trends studies advanced for investigation plans totaled approximately \$136.6 thousand for fiscal year 2002, while a total of \$70.0 thousand is available.
- The Technical Review Committee recommended funding for two studies in fiscal year 2002 (**Table 1**). Total cost for these projects in fiscal year 2002 is anticipated to be about \$77.6 thousand, which is about 10% more than the target budget level.
- Although the Technical Review Committee had asked for a proposal to form a working group to examine catch-and-release mortality of fishes, they did not recommend the submitted study be funded. This decision was based on budget limitations and the greater perceived strategic importance of two other studies. One would seek to change existing methods used to set salmon spawning goals and sustain subsistence harvests, while the other would complete database work begun in fiscal year 2000 for the Arctic, Yukon, and Kuskokwim regions.

Recommendation Process – Harvest Monitoring and Traditional Ecological Knowledge Studies

- Two studies were advanced for Investigation Plan development in the Harvest Monitoring and Traditional Ecological Knowledge categories (**Table 2**). Both of these address the issue of Harvest Information Access.
- The Technical Review Committee recommended funding for one study in fiscal year 2002 (**Table 2**). Total cost of this project in fiscal year 2002 is anticipated to be about \$27.5 thousand, which is about 21% less than the target budget level.
- Both studies had technical merit, would be done by experienced investigators, and would contribute to capacity building. However, the recommended study, which would integrate two existing statewide databases into a single Geographic Information System to enhance availability and use, was thought to have greater strategic importance than the other study, which would make subsistence harvest timing information easier to access and use.

Funding Recommendation Summary

- Three studies, two Stock Status and Trends studies and one Harvest Monitoring/Traditional Ecological Knowledge study, were recommended for funding with a cost of \$104.0 thousand in fiscal year 2002 (**Tables 1, 2, and 3**).
- All funding for these three studies would go to non-government organizations and State agencies (**Chart 1**).
- About 11% of the funds for these three studies (\$12.0 thousand) would be used for local hire, while investigators would contribute \$28.0 thousand in matching funds (**Table 4**).

Chart 1. 2002 Inter-regional funding distribution**Table 4.**

2002 Local Hire and Matched Funds Report Inter Regional

Region 7. Inter regional

Type A . Stock Status & Trends

Doc #	Agency/Org	Title	Local Hire \$	Matched \$
02-025	UAF, UW	Development of general method for calculation of sustainable subsistence harvest	\$0.00	\$0.00
02-069	ADFG-CFD	Develop Shared Fishery Database	\$12,000.00	\$28,000.00
02-071	ADFG-SFD, USFS	Assessment of Scientific Studies Relating to the Practice of Catch-and-Release Fishing in Western and Interior Alaska	\$0.00	\$0.00
Total			\$12,000.00	\$28,000.00

Type B. Harvest Monitoring/TEK

Doc #	Agency/Org	Title	Local Hire \$	Matched \$
02-043	ADFG-SD	Alaska Subsistence Fisheries Database GIS Integration	\$0.00	\$0.00
02-047	ADFG	Alaska Subsistence Salmon Harvest Timing (Phase I): Bristol Bay, Chignik District, Cook Inlet, and Kuskokwim Drainage	\$0.00	\$6,000.00
Total			\$0.00	\$6,000.00
Grand Total			\$12,000.00	\$34,000.00

- Investigation plans not selected for funding this year will not automatically become eligible for funding consideration next fiscal year. Investigators need to submit new proposals requests to fund this work in fiscal year 2003.

Study Recommendations, Descriptions, and Justifications

- Additional details about each project can be found in the sections that follow. For each project, we have included the Technical Review Committee recommendation, a project description, and the technical justification for the recommendation.
- Study information is organized into two sections. The first contains Stock Status and Trends studies information, while the second contains Harvest Monitoring and Traditional Ecological Knowledge studies information. Within each section, studies are organized by their assigned numbers, in increasing order.

02-025

Development of General Method for Calculation of Sustainable Subsistence Harvest

Investigator(s): University of Washington, School of Aquatic and Fishery Sciences; University of Alaska Fairbanks, Juneau Center, School of Fisheries and Ocean Sciences; Alaska Department of Fish and Game, Division of Commercial Fisheries

FY2002 Budget: \$45,741.00

Total Budget (3 years): \$168,910.00

Geographic Area: Inter-Regional

Information Type: Stock Status and Trends

Issues:

A key question in management of all subsistence fisheries in Alaska is determining the level of sustainable subsistence harvesting. This project will develop a new paradigm and algorithm for calculation of sustainable levels of subsistence harvesting in the form of a protocol and computer program for analyzing available data on a salmon stock and evaluating the long term consequences of different harvest policies.

Objectives:

- 1) Develop a format for definition of subsistence fishery management objectives.
- 2) Use defined objectives to analyze utility functions for different levels of catch and different inter-annual variation in catches for defined subsistence user groups.
- 3) Develop computer software to evaluate alternative management policies.
- 4) Use a decision-analysis framework to analyze objectives, including evaluation of uncertainty.
- 5) Develop a protocol for using the computer software, consisting of a users manual, worked examples, and a web-based power-point demonstration of how to use the software and interpret results.

Methods:

The three major innovative components of the protocol to be developed would be (1) describing salmon population dynamics using ecosystem oriented models that move beyond fitting stock and recruitment data to Ricker models, (2) evaluating harvest policies that maximize objectives other than long-term maximum yield, and (3) using formal methods of statistical decision-analysis to incorporate uncertainty into the evaluation of consequences. Salmon population models would include components to simulate (1) dynamics of populations at low abundance densities, (2)

being managed, (5) forms of compensatory mortality other than Ricker model type, (6) implementation error associated with estimating run size and catch in a year, and (7) effects of oceanic regime shifts on salmon production. The computer program developed would be written using AD Model Builder software (Otter Software, Nanaimo B.C.), and the user interface would be programmed in EXCEL to provide a user-friendly format for data entry and output. Workshops and meetings would be scheduled during the project to gather and disseminate information among agencies and organizations.

Deliverables/Products:

The final product of this project would be a computer software package and protocol that should greatly enhance the ability of fisheries management agencies and organizations to evaluate alternative subsistence harvesting regimes. Reports would also be written at the end of each work year to describe methods, data, results and accomplishments, as well as any proposed changes in design or methods. These reports would be produced in both paper and electronic format, and provided to the Office of Subsistence Management as well as the Alaska Resources Library Information System (ARLIS).

Experience of Investigator(s):

The investigators from University of Washington and University of Alaska have extensive experience in all aspects of this project and have been leaders in salmon research, particularly in the area of quantitative stock assessment. They have worked closely with management agencies and various user groups to evaluate salmon spawning goals and management policies, and have held workshops on various fishery topics for both professional and lay audiences.

The investigator from Alaska Department of Fish and Game has worked extensively on applied salmon research and management topics, including scientific evaluation of harvest policies.

Partnerships/Collaboration/Consultation:

While the software developed by this project would primarily be used for analyses conducted by professional biologists working for agencies or regional groups, subsistence user groups would have a key role in developing subsistence fishery management objectives and evaluating resulting products. Consultations have already taken place with Bristol Bay Science Center, Aleutians East Borough, Chignik Regional Aquaculture Association, and Alaska Department of Fish and Game. Further consultations would occur with other regional organizations and Federal fishery management agencies.

Justification:

The overall concept for this work has merit, and new methods for establishing salmon escape-ment goals and subsistence harvest strategies would benefit both management agencies and subsistence users. The investigators propose to develop methods and software to estimate sustainable subsistence salmon harvests. Methods currently being used are based on achieving

maximum sustained yield, which is not a suitable management goal for management of subsistence fisheries, and on empirical models, which do not incorporate uncertainty. The technical approach proposed to develop this methodology is excellent. Two modifications are needed improve the usefulness of this work to Federal subsistence fishery program. First, the focus of proposed efforts was directed primarily at sockeye salmon and State-managed subsistence fisheries. This project needs to be broadened to include other salmon species and to focus on Federally managed, rather than State managed, subsistence fisheries. The most difficult Federal subsistence management issues currently exist for chinook and chum salmon runs to the Yukon and Kuskokwim Rivers. Therefore, at least one of these species in one of these systems should be used as a test case for model development and evaluation. Second, a staff member from a Federal fishery management agency needs to be added as a partner to serve a function analogous to that served by the State management agency partner. This would help ensure acceptance of this tool by both state and Federal fishery management agencies.

The investigators and their organizations or agencies have both the administrative and technical expertise to conduct this work. At least one of the investigators also has a great deal of experience conducting effective workshops with both professional fishery biologists and resource users on various stock assessment procedures and fisheries problems.

Partnership and capacity building aspects of this proposed study, while improved from that described in the original proposal, still require further refinement and development. The Investigators have selected an issue with widespread interest among Federal subsistence users and management agencies, but need to ensure that meaningful participation and information exchange occurs with local communities and residents, and that local support exists for the proposed study. No letters of support for this work were received from local organizations, and consultations with these organizations have been too limited. While technical reviewers and fishery managers generally see a benefit from conducting the proposed work, Regional Advisory Council members and Federal subsistence users may not understand or agree with this approach. Therefore, investigators may need to put more effort into explaining the need for this work and its products to this audience.

02-069

Develop Shared Fishery Database

Investigator(s): Division of Commercial Fisheries, Alaska Department of Fish and Game**FY2002 Budget:** \$ 31,900.00**Total Budget (1 year):** \$ 31,900.00**Geographic Area:** Inter-Regional**Information Type:** SST**Issues:**

This is a continuation and next phase of a database inventory, planning and development project funded in fiscal year 2000 (*Shared Information for Fishery Management in AYK, FIS00-016*). A data management system for management of fisheries in the Arctic/Kotzebue/Norton Sound, Yukon River, and Kuskokwim River federal subsistence fisheries management regions does not currently exist. The goal of this project is to develop a comprehensive data management system for use by all governmental and public entities involved in managing these fisheries. Ready access to critical fisheries information would be beneficial to both management agencies and subsistence users.

Objectives:

- 1) Aggregate diverse sources of fishery data.
- 2) Error-check and correct historic data as necessary.
- 3) Begin standardizing data formats, where necessary, for inclusion into a centralized database.
- 4) Develop intermediate data entry, editing and reporting programs for area staff so that more thorough error checking, editing and a standard format of data can begin as soon as possible.

Methods:

This would be the second year of a project first funded in fiscal year 2000. Activities for fiscal year 2002 would focus on completing any remaining data inventory, editing, entry, and documentation; and to correct or reconfigure important data sources that are currently in a format that would be especially difficult to incorporate into a data management system. The major information sources needed for an information management system were identified as subsistence and commercial harvests, spawning escapements, and ancillary biological data such as age, sex and size. Each of the specific objectives listed above would be completed for each of these data sources. Alaska Department of Fish and Game staff in area offices would transfer biological and recent spawning escapement data to a centralized location, Division of Commercial Fisheries Region III Biometrics Section in Anchorage, so that the work can be accomplished. Area office staff would work closely with Biometrics Section staff in editing and correcting historic data.

Several critical data sources have already been identified as needing immediate attention to prevent data loss. Editing and reporting programs would also need to be developed for some data sources. Additional problems or needs would be identified and, if possible, corrected during this next year of the project.

Deliverables/Products:

A project report detailing accomplishments; descriptions of which data have been aggregated, edited, and reformatted; and examples or descriptions of intermediate data entry forms and reports would be submitted by October 31, 2002. Also available would be an updated inventory of data sources developed during 2000 activities, including documentation on data content, storage format, any particular problems, and a primary contact; and updated examples of management reports, data access, data linkage types, and data summaries required by parties involved in fishery management.

Experience of Investigator(s):

The principal investigator has over twenty years of experience in the Arctic-Yukon-K Region as both a fisheries biologist and biometrician for Alaska Department of Fish and Game. She has extensive knowledge of how fishery data is collected, stored, compiled and interpreted to support resource management needs. She is familiar with modern database software, uses database software on a regular basis, and has developed and maintained several smaller-scale data management systems. She also worked for several years as the primary region contact and contributor on a closely related, federally funded project to aggregate salmon escapement data into a central Geographic Information System. While not assigned to this project, the Division of Commercial Fisheries has staff in their Headquarters office that could provide assistance to the principal investigator. These staff members develop and maintain several large-scale client-server databases, such as the Mariner data management system used in Bristol Bay and the Alex/IFDB data management system used in Southeast.

Partnerships/Collaboration/Consultations:

Efforts would be made to hire local residents as technicians or fisheries biologists to assist Alaska Department of Fish and Game area staff and the principal investigator with data editing. Training in the use of computer software would be provided.

Fisheries management activities within the Arctic-Y-Kuskokwim region has more and more become a cooperative effort among the Alaska Department of Fish and Game, local organizations such as the Kuskokwim River Salmon Management Working Group and the Yukon River Drainage Fisheries Association, and federal agencies. Activities have included fisheries management and restoration planning, data collection and information sharing, and pre-season, in-season, and post-season consultations. These efforts have been developing for over a decade, have increased the participation of rural residents in the management process, and have improved the management of the region's fisheries.

year of activity was approved by the Federal Subsistence Board in 2000 to complete two objectives: 1) comprehensive inventory of available data, and 2) determination of information needs of government agencies and non-government organizations involved in cooperative fishery management. This work has generally proceeded on schedule, and both 2000 project objectives will be successfully completed. A detailed progress report was submitted June 15, 2001, a short performance report is due September 3, 2001, and the final report is due December 30, 2001. A 2001 proposal to continue these efforts was requested by the Technical Review Committee. It was advanced to the investigation plan stage as study FIS 01-016, but did not receive further consideration because the investigator did not require funding until 2002. Activities proposed for 2002 consist of 1) aggregating the diverse sources of fishery data identified in 2000, 2) checking and correcting errors, 3) standardizing data formats to facilitate inclusion into a centralized database, and 4) developing intermediate data entry, editing and reporting programs to ensure more thorough error checking, editing, and standard formatting during future data collection activities. The strategic importance of making fisheries information easily accessible through a shared database is quite high. While the final scope and design of the database will be influenced by results and recommendations of the Database Working Group funded in 2001 (study FIS 01-154), proposed objectives for the 2002 study are general enough to be successfully achieved without waiting for final recommendations and protocols from the Working Group. The investigator has incorporated proposal review recommendations into the investigation plan, and has considerably reduced the amount of funding requested for this study. Full-time personnel costs would be covered by the State as in-kind matching funds. Efforts would be made to hire local residents to assist in data entry, editing, and formatting. This would help foster local interest and ownership in the final product and strengthen partnership and capacity building aspects of this work.

02-071

Assessment of Scientific Studies Relating to the Practice of Catch-and- Release Fishing in Western and Interior Alaska

Investigator(s): Sport Fish Division, Alaska Department of Fish and Game**FY2002 Budget:** \$ 59,000.00**Total Budget (2 years):** \$ 246,200.00**Geographic Area:** Inter-Regional**Information Type:** SST**Issues:**

Contemporary sport anglers consider catch-and-release a legitimate, responsible, and often desirable fishing practice. However, subsistence users in western and interior rural Alaska do not release their catches and question whether there is sufficient knowledge, applicable to Alaska, to determine the fate of released fish and to assess the potential effects of catch-and-release sport fisheries on subsistence fishing opportunity. A comprehensive summary of scientific studies of catch-and-release is not available to fishery managers and resource users, nor has there been any assessment or review of potential applications of catch-and-release practices to western and interior Alaskan fisheries. This project would coalesce and review existing information regarding effects of catch-and-release, and then convene a working group composed of subsistence users, sport users, and fishery managers to examine this information. The working group would develop recommendations for a comprehensive strategy regarding assessment of catch-and-release effects on subsistence fishery resources.

Objectives:

- 1) Coalesce available scientific studies concerning effects of catch-and-release on fish and assess their reliability and applicability to Alaskan fisheries.
- 2) Produce a catch-and-release database of these studies on the Internet, including references, comments on reliability and applicability to Alaskan fisheries, and links to each study.
- 3) Make specific recommendations to State and federal agencies for interpreting and using existing information, for establishing protocols for conducting studies, and for conducting any needed studies.

A comprehensive literature search would be conducted of all scientific journals, and additional searches would be made for State, federal, and Tribal reports, academic theses, and other sources of information. Most searches would be done through the Alaska Resources Library and Information Services. All studies found would be reviewed for both scientific reliability and applicability to Alaskan fisheries. For each study reviewed, an abstract or summary, complete reference, and review of reliability and applicability would be made available on the Division of Sport Internet site. Full-text, downloadable files of each study report would also be made available, if permission could be obtained.

During the second year of the project, a working group, composed of subsistence users, sport users, and fishery managers, would be convened to examine compiled catch-and-release study information. Group members would include fishery biologists and social scientists from State and federal agencies, as well as representatives of user groups. The group would review compiled catch-and-release information, make recommendations for interpreting and using the information, inventory catch-and-release fisheries within the area covered by the project, and identify any issues of concern. The group would also make recommendations on the needed for any further studies of catch-and-release effects, including design and conduct any needed studies, and how to use this information in management of fisheries resources. All this would be used to design a comprehensive strategy to further assess catch-and-release issues in western and interior Alaska.

Deliverables/Products:

Two main products would be available from this work. The first would be a centralized database, accessible from the Division of Sport Fish Internet site, of catch-and-release study information, in the form of full-text downloadable files and annotations concerning reliability and applicability. The second would be a written report that could serve as a comprehensive strategy guide for assessing catch-and-release issues in western and interior Alaska. The report would include a review of available catch-and-release information, recommendations for interpreting and using this information, an inventory of catch-and-release fisheries within the project area, identification of issues of concern; recommendations for further studies of catch-and-release effects, protocols on design and conduct of any needed studies, and suggestions on use of this information managing fisheries resources.

Experience of Investigator(s):

The Alaska Department of Fish and Game, Division of Sport Fish, has a long history of high quality fisheries data collection and analysis activities. The principal investigator has a strong technical fisheries background that has included the design and conduct of catch-and-release mortality studies. Other staff biologists assisting with this work also have many years of experience conducting and evaluating catch-and-release studies as well as experience in coalescing data from diverse sources. In addition, the investigator will have access to biometric support as well as computer specialists with expertise in creating and maintaining Internet sites. The Alaska Department of Fish and Game is a founding member of Alaska Resources Library and Information Services and has a full-time librarian available to assist with searches and

obtaining copies of catch-and-release studies.

Partnerships/Collaboration/Consultations:

Development of a comprehensive database on catch-and-release effects on fishes would provide a valuable tool for future capacity building between fishery management agencies and affected user groups. Formation of a working group composed of subsistence users, sport users, and fishery managers to examine this information and develop recommendations would build partnerships and develop the capacity of subsistence users to actively participate in the development of resource management strategies.

Justification:

The Technical Review Committee requested this proposal due to broad concern with effects of catch-and-release sport fishing within many arctic, western, and interior Alaska rural communities. Regional Councils for these geographic areas have identified concern with delayed mortality resulting from catch and release fishing as an issue, and have request specific studies addressing the following issues: 1) long-term mortality of released angler-caught sheefish, char, and other freshwater species, including fish that are caught multiple times; 2) delayed mortality of angler caught and released northern pike from the Innoko River and elsewhere; and 3) effects of catch and release fishing on salmon and trout behavior, mortality, and spawning success. The Technical Review Committee suggested that a working group be formed to address the general issue of catch-and-release hooking mortality by conducting an inventory of catch and release studies done within this area, examining the applicability of existing data on catch-and-release mortality as practiced within this area, and developing recommendations for any additional studies on catch-and-release mortality. The Office of Subsistence Management solicited this proposal as a vehicle to develop such a working group. Technical Review Committee requested several modifications to the original proposal and resulting investigation plan, and the investigator incorporated most of these into the last version submitted. The cost of this effort has been substantially reduced from the original request, and does not seem unreasonable when compared to the cost of past working group funded under this program. Partnership and capacity building would occur through dissemination of information of catch-and-release fish mortality studies, through participation of subsistence users in the working group, and through review of working group products by Regional Advisory Councils, rural residents, and local and regional organizations. Some reviewers still have concerns about using Subsistence Fishery Resource Monitoring Program funding to conduct work on effects of catch-and-release sport fishing on fishes. Also, while several Regional Advisory Councils and local communities have identified catch-and-release fishing effects on local fishery resources as an issue of concern, no letters of support for this study have been received. Therefore, the strategic importance of this particular study to subsistence users may not be as great as was originally anticipated by the Technical Review Committee.

02-043

Alaska Subsistence Fisheries Database GIS Integration

Investigator(s): Division of Subsistence, Alaska Department of Fish and Game**FY2002 Budget:** \$ 27,525.00**Total Budget (1 year):** \$ 27,525.00**Geographic Area:** Inter-Regional**Information Type:** HM/TEK**Issues:**

Public access to information on subsistence fisheries is an important part of the federal management and regulatory process. There is a need to make information on subsistence harvests more easily accessible in a format that is easy to use and understand. Since fishery resource use is highly regionalized within the State, a Geographic Information System would allow users to better visualize and understand where and how different communities use various fish species throughout the year. Being able to use maps to illustrate this information would be more effective and intuitive than depictions of these data using tables and charts.

Objectives:

- 1) Link subsistence fisheries information contained within the Alaska Subsistence Fishery Database maintained by Division of Subsistence, Alaska Department of Fish and Game to the Geographic Information System of anadromous stream information maintained by Division of Habitat, Alaska Department of Fish and Game.
- 2) Create search and query options, tools, and menus within integrated database to allow users to graphically display subsistence fishery information by community, location, or drainage.
- 3) Provide access to the Geographic Information System on the World Wide Web.

Methods:

The Southeast Subsistence Fisheries Geographic Information System Database, developed by the investigator and his agency during studies FIS 00-039 and 01-103, would serve as a model for this statewide project. The system of organization of numerical harvest data and analytical approaches established for the Southeast project would be adopted for the statewide information. Spatial relationships between fishing communities and streams have previously been developed in various community use area research and Southeast Alaska harbor seal harvest research projects.

To keep pace with the changing Geographic Information System technology, the Division of Subsistence would upgrade its ArcView version 3.2 software to the newly released version 8.1. Customization of this software would be accomplished using Visual Basic programming language to design query boxes, pull-down menus, summary maps and chart options. Special buttons, toolbars, and menus would be programmed to perform specific tasks for working with Alaska Subsistence Fishery Database information. To accomplish this in the most efficient and effective manner, the investigator would attend a training class in Visual Basic.

Existing Alaska Department of Fish and Game electronic map coverage would be used as base maps for the Geographic Information System. Features on the maps would be linked to data records from the Alaska Subsistence Fishery Database by converting subsistence fishery data from a Microsoft Access format to Dbase and then transferring these data into ArcView. This linking, or geo-referencing, of graphically depicted landscape features to data records was anticipated during development of the Alaska Subsistence Fishery Database through the use of the same stream reference codes contained in the anadromous fish stream Geographic Information System data catalogue maintained by Habitat and Restoration Division, Alaska Department of Fish and Game. Information related to a specific community would be linked to the map using the community name as the geo-referencing variable.

In addition to the data contained in the Alaska Subsistence Fishery Database, the Geographic Information System would contain other geographic data relevant to subsistence fisheries. For example, locations of regulatory markers defining different subsistence fisheries, showing the boundaries in and around the water bodies where fishing is permitted, would be available in the program.

The Geographic Information System would be designed and made available for public use as both a self-contained, portable system on CD-ROM, to be run using either ArcView GIS software or the free Arc Explorer program, and as an Internet application. Users would be able to select harvest information of interest by using search criteria such as year, community, fish species, and water body. Results of database selections would be displayed in the form of graphs and charts within the project. Queries based on data parameters such as communities with greatest harvests, communities with a certain level of participation, or streams with a certain number of fish harvested, would also be possible. Communities and water bodies that fit the criteria used would also be illustrated on a map. The uniform data structure of the Geographic Information System and database projects would ensure that functionality of the system would be maintained with addition of each year's harvest information.

Deliverables/Products:

The Alaska Department of Fish and Game, Division of Subsistence will produce a CD-ROM of the completed project, containing a number of scalable maps with geographic features linked to the subsistence fisheries harvest information found in the Alaska Subsistence Fishery Database. The CD-ROM will be delivered to, and demonstrated for the Office of Subsistence Management, Fisheries Information Services Division, and training in the use of the GIS will be made available. CD-ROMs would also be made available to other appropriate federal and

needed, local communities and Regional Advisory Councils would receive a demonstration of the project. The Internet-based application will also be demonstrated and made available to the public.

Experience of Investigator(s):

The Alaska Department of Fish and Game, Division of Subsistence, has generated, collected, and stored geographic information related to subsistence fisheries harvests for 20 years. The principal investigator has worked with Division of Subsistence spatial data for over two years. Projects he has worked on and supervised include a Southeast Alaska harbor seal harvest location atlas, ten different community harvest use area mapping projects, and a Southeast Alaska Subsistence Fisheries Geographical Information System Database (FIS 00-039 and FIS 01-103), which would served as a model for this proposed statewide project.

Partnerships/Collaboration/Consultations:

As has been done for the Southeast project, the Alaska Subsistence Fisheries Geographic Information System project would be available for review and use by Regional Subsistence Councils, local governments, environmental programs, and resource managers. The project would have a statewide perspective to provide access to data contained in the Alaska Subsistence Fisheries database. Individual communities or agencies could use the database as a tool in their own research, with maps and charts available for illustration and organizational purposes. For example, Division of Subsistence meetings with the Organized Village of Kake in the summer of 2000, to demonstrate and discuss the Southeast Subsistence Fisheries Geographic Information System project, led the Village to use the Geographic Information System as a model for their own traditional use area mapping and documentation projects. Other groups may choose to modify the Geographic Information System for their own particular needs as well.

Justification:

This project would provide a graphic means for selecting, analyzing, and displaying subsistence fishery information. Development and distribution of this Geographic Information System database is intended to facilitate research and fisheries management by local organizations and individuals as well as agencies. Some Regional Advisory Councils have expressed concern about the value of statewide proposals, since they feel relationships to regional priorities, regional partnerships, and regional benefits are often unclear. Benefits of this project include making in- and postseason data more easily and widely accessible via the Internet or self-contained CD-ROM systems. This information would be available as a statewide database, using a Southeast project conducted by the investigator as a prototype. Products from this work would be immediately useful for fishery managers, and would serve to build capacity for regional and local organizations by providing access to important information. Project objectives are clear and achievable, methods are technically sound, and identified products would be of wide general use. The investigator and his agency have the technical and administrative expertise to complete this project, as demonstrated by their established track record with similar projects. Consultations are ongoing at the regional level. While there are no local partners to assist in conducting the work,

results of the project would be readily available to agencies and communities in a familiar format. Several local residents, communities, and organizations have expressed concern with making some types of subsistence information widely available through publicly accessible databases, particularly on the Internet. The Office of Subsistence Management will be working with both the Solicitors Office and Contracts and Government Services Division to identify appropriate information sharing standards that can be established under existing laws and regulations. This issue is also being addressed the Statewide Database Working Group funded under study FIS 01-054.

02-047

Alaska Subsistence Salmon Harvest Timing (Phase 1): Bristol Bay, Chignik District, Cook Inlet, and Kuskokwim Drainage

Investigator(s): Division of Subsistence, Alaska Department of Fish and Game

FY2002 Budget: \$ 13,991.29

Total Budget (2 years): \$ 28,488.00

Geographic Area: Inter-Regional

Information Type: HM/TEK

Issues:

There is a lack of ready access to information on subsistence salmon harvests timing by community and harvest location. Such information is often needed to assess inseason harvest results, to evaluate impacts of regulatory changes on subsistence salmon harvest, and to select research sites for specific species and stocks. This project would also help to improve the practice of recording harvest dates on subsistence permits and calendars by demonstrating how harvest timing information can benefit subsistence users.

Objectives:

- 1) Provide a database of subsistence salmon harvests by date, species, and location for subsistence fisheries in Bristol Bay, Chignik District, Cook Inlet, and the Kuskokwim Drainage.
- 2) Graphically depict subsistence fishery harvest timing through charts showing percentage and estimated numbers of annual daily and cumulative harvest for selected time periods.
- 3) Provide a standard framework, based upon the Alaska Subsistence Fisheries Database, which can be easily updated and expanded to accommodate harvest-timing data from all subsistence fisheries.
- 4) Promote daily reporting of subsistence harvests on permits and calendars by demonstrating the utility of harvest timing information in fisheries management.

Methods:

This project would provide harvest timing information from subsistence salmon fisheries harvest assessment programs administered by the Division of Subsistence, Alaska Department of Fish and Game, in Bristol Bay, Chignik District, Cook Inlet, and the Kuskokwim Drainage. It would serve as a model for providing this information on a statewide basis. In certain situations, when

salmon run timing information is not available, harvest timing can be used to estimate run timing. However, harvest timing can often differ from salmon run timing due to local conditions and management regulations that can influence harvest and preparation activities disproportionately to resource availability.

The source of harvest timing information used for this study would be reported harvests by date between mid-May to mid-October, which would accommodate the general period of salmon runs. The harvesting of spawned out salmon (“redfish”) is poorly represented by dates of harvest, since this activity frequently occurs after permit reporting period or village surveys end. Thus, estimates of numbers of species harvested would exclude late season harvests of redfish, which is a common occurrence in certain fisheries within Bristol Bay and the Chignik areas. Harvests without specific dates would be excluded from analyses. Timing of harvests of individual species by location and user residence would be extracted from permits and calendars for each subsistence fishery. Efforts would be made to identify community, location, and year combinations for which harvest information is poorly documented. Timing data would be placed within a database modeled after, and using conventions developed for the Alaska Subsistence Fisheries Database and established by the Subsistence Fisheries Harvest Assessment Working Group in 2001 during study FIS 00-017. The resulting database would be constructed so that it could be queried for fishery, species, and location to produce tables and charts of harvest timing for specified years or multiyear averages representing either percentages or estimates of harvest numbers. Use of this database would replace the existing approach of creating tables and charts within Excel. Not only the existing method tedious, since it requires previous summarizing of data, but it also entails reiteration of all steps for each update of a year and location. This has resulted in limited usage of this information, use of out-of-date information, and a greater potential for the introduction of errors.

The summarized harvest timing information from the database would be readily available in seven formats: 1) tables showing daily percentage and cumulative percentage harvests by date; 2) tables showing estimated numbers of daily harvest and cumulative harvest by date (exclusive of “post-season” harvests); 3) charts of cumulative percentages; 4) charts of estimated cumulative inseason harvests; 5) charts of daily percentages; 6) charts of estimated daily inseason harvests; and 7) data to export into Excel spreadsheets for further analysis.

The database would be demonstrated in Anchorage for interested agencies and organizations, as well as during regional harvest monitoring workshops organized under study FIS-01-107. Initially, the harvest-timing database would be distributed on CD-ROM as separate Access 2000 entities to make it compatible with the limited computer resources that exist in many rural communities. Future integration of the harvest-timing database with the existing Alaska Subsistence Fishery Database would be explored for usefulness and utility.

Deliverables/Products:

The investigators would provide a CD-ROM containing both the Alaska Subsistence Fisheries Database and the Alaska Subsistence Harvest Timing Database in Microsoft Access 2000 to the Office of Subsistence Management and other interested agencies and organizations. An

Experience of Investigator(s):

The Division of Subsistence, Alaska Department of Fish and Game currently administers subsistence fisheries harvest reporting for the Bristol Bay area, Chignik area, Cook Inlet area, and the Kuskokwim Drainage; and has been responsible for the creation and maintenance of several databases that facilitate understanding and managing subsistence resources. Microsoft Access databases developed include the Alaska Subsistence Fisheries Database and the Community Profile Database.

Partnerships/Collaboration/Consultations:

All proposed work would be done using information collected as part of existing harvest assessment and permit systems, which have existing partnerships with various rural communities and organizations. The model developed would allow opportunities for collaboration with organizations with limited database experience that wished to add fisheries (both salmon and non-salmon species) to the database.

Justification:

This statewide project would provide harvest timing information for subsistence fisheries managed by Alaska Department of Fish and Game, and could be used as a model to develop similar capabilities for other subsistence fisheries within the State. A summary of ten years of existing data would be included in a Microsoft Access database, which would be distributed on CD-ROMs. The data would be readily available to all users, and in this sense builds capacity for partners. Bristol Bay, Chignik, Cook Inlet, and Kuskokwim Drainages all have rivers and streams under federal fishery management jurisdiction. While this proposal does not directly address an issue identified and prioritized by the Regional Advisory Councils, the project would facilitate State and federal management of salmon, including some populations of concern. By providing easy access to harvest timing curves, this type of information would be more readily used in making management decisions. Study objectives are clear and achievable. The study is appropriately designed, and the methods are technically sound. The products identified are acceptable, and would be of use to federal managers within a regional context. The investigator and agency both have technical and administrative expertise to conduct this work, as well as an excellent track record with past projects and cooperative ventures. The project would use existing subsistence data, so no additional field collections would be required. Consultations are ongoing at the regional level, and results would provide more ready access to the data for rural residents. The project would not employ or train any local residents, or be conducted in partnership with any local organizations. Several local residents, communities, and organizations have expressed concern with making some types of subsistence information widely available through publicly accessible databases, particularly on the Internet. The Office of Subsistence Management will be working with both the Solicitors Office and Contracts and Government Services Division to identify appropriate information sharing standards that can be established under existing laws and regulations. This issue is also being addressed the Statewide Database Working Group funded under study FIS 01-054.